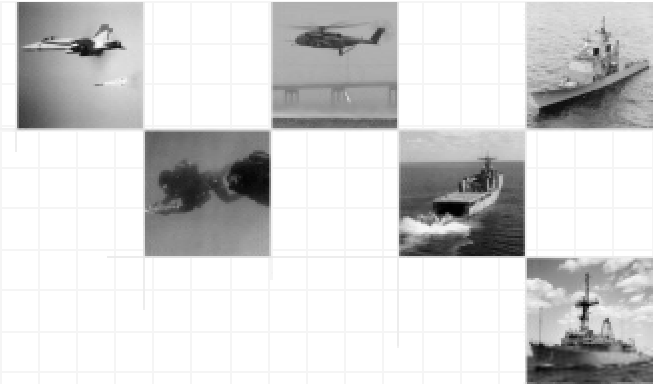




Naval Sea Systems Command

Coastal Systems Station

The leader in littoral warfare



Littoral Warfare Battle Force Integration and Interoperability Challenge Brief to NDIA Expeditionary Warfare Conference

Captain H. Duane Covert
Commanding Officer, NAVSEA
Panama City

DAHLGREN DIVISION
NAVAL SURFACE WARFARE CENTER

12/05/2000

EXW 00



Command Capability Issues (CCIs)

2000

CINCLANTFLT

Battlespace Connectivity/Knowledge Mgt
Common Tactical Picture/Combat Sys
Flexible/Responsive ISRT Architecture
Maintenance
Mine Warfare/Mine Countermeasures
Logistics
Quality of Service
Survivability & Protection
Theater ASW (including Shallow Water)
Training, Ranges, and Simulation/
Stimulation

1999

CINCLANTFLT

ASW (including shallow water ASW)
Battlespace Connectivity
Combat ID
Common/Consistent Tactical Picture
Information Warfare & Counter-GPS
Jamming
Maintenance
Mine Warfare (Offensive & Defensive)
Ship Self Defense
Simulation/Stimulation in Exercises
Weapons Handling & Loading

2000

The 21 Fleet/Force Consolidated CCIs are

- **Battlespace Connectivity**
- Flexible Responsive Targeting
- Common Tactical Picture
- Mine Warfare (Offensive and Defensive)
- Enhanced Fire Support
- Theater/Littoral ASW
- Precision Strike Munitions
- Chemical/Biological Defense
- Quality of Service and Maintenance
- Force Protection
- Coalition C4I
- Expeditionary Logistics
- Theater Air Defense
- Combat ID
- Fight in Adverse Conditions
- Training, Ranges, and Simulation/Stimulation
- Information Warfare
- Unmanned Tactical Reconnaissance
- Non-Lethal Technologies



Impact of Not Solving Interoperability

Unable to Conduct Missions in the Littorals

Battle Force

Army/Airforce

Amphibious Force
MAGTF
(MEF/MEB/MEU)*

MPF/Sealift

Monica Shepherd Statement at the
Distributed Engineering Plant
Symposium:

- Can we today support a full MEF deployed afloat?



Past Amphibious Operations





Future Amphibious Operations





The Interoperability Challenge

Options to Achieve Interoperability

Specifications

- DOD Driven
- Lack of Innovation
- Technology Relevance
- Drives to Obsolesce



Concept / Capability / Performance

- Commercial Resolution
- Open Architecture with Third Party Development
- Flexible and Adaptive

**Must Leverage
Existing
Development
Efforts**



Role of Warfare Centers

- Facilitator Between Industries
 - Experimentation with Concepts
- Validation of Concept / Design
- Certification for Acceptance / Deployment
- Repository of Historical and Lessons Learned Data
- Resource for Use by Industry for Expertise in:
 - Warfare Operations & CONOPS
 - Unique Facilities
 - Test Ranges
 - Modeling & Simulation
 - Specialized Areas
 - * Threats
 - * Environment
 - * Susceptibility / Vulnerability
 - * Historical Concepts

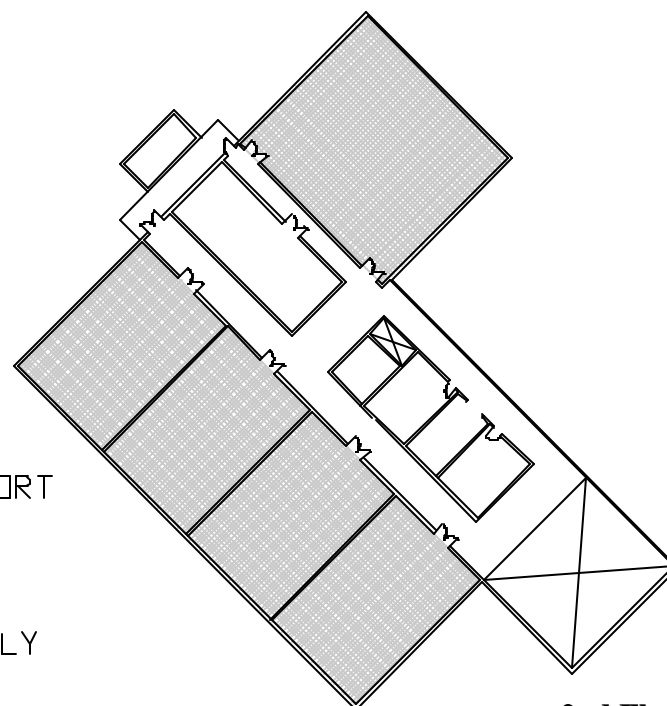
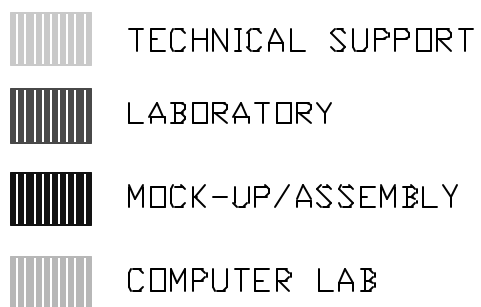


Amphibious Warfare Integration Facility

P372 - layout



1st Floor



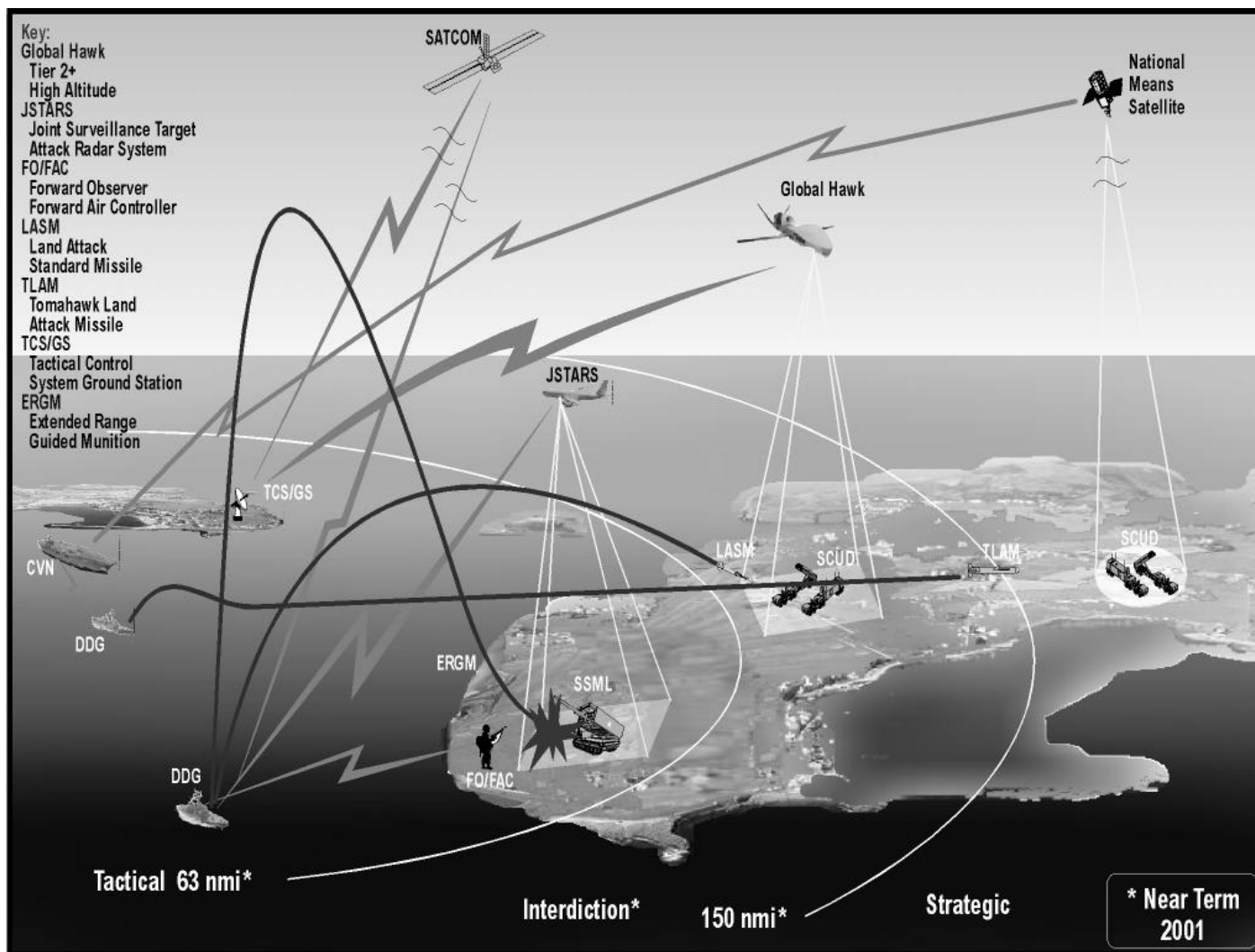
2nd Floor

Size: 46,048 SF

Start: FY01

Cost: \$8,911K

Industry Thoughts





Backups

- Examples of Interoperability Issues
- Examples of Success Stories



ARG/MEU Interoperability Examples

Issues are drawn from exercises, JTFXs, workups & experiments to provide understanding of interoperability issues to be addressed for ARG/MEU

Some excerpts Tarawa ARG messages:

Message from COL Gunther (13th MEU CO)

- UHF-MDR - by all accounts, our #1 problem. Without this, most of the other systems can't be tested. This gives us our big ship-to-ship pipe. A system of record (or at least one that has been deployed multiple times in the past), it is currently not functioning aboard any ship in the ARG. Without it, no telephone between ships, no web browsing (key to letting small decks get info they need), very limited SIPRNET, no VTC.
- ADNS - had a bunch of problems when we brought Challenge Athena up. We anticipate similar problems when UHF-MDR comes up and it has to start making allocation decisions in yet another direction. Without this functioning correctly, all this extra bandwidth does no good.
- We have experienced some unintended consequences of IT21 installs. TSS install required some of the old switching equipment to be disassembled to get the new stuff in - took over a week to reassemble and troubleshoot POTS, a system that had worked fine last time out. Same story on radios last at sea. Training for our folks is limited and the tech reps tend to be "installers" vice system engineers.

Connectivity

Emerging
Technology



ARG/MEU Interoperability Examples

Issues are drawn from exercises, JTFXs, workups & experiments to provide understanding of interoperability issues to be addressed for ARG/MEU

Software
Testing

Duluth SITREP 99-06: DULUTH STILL REQUESTS A C4I INSTALL TOTAL SYSTEMS INTEGRATION SOVT. THAT WILL COMPLETELY TEST COMPATIBILITY OF COMMUNICATIONS. PIPELINES (UHF MDR, 5KHZ, INMARSAT B, PIER CONNECTIVITY) THROUGH ADNS. CURRENTLY EACH SOVT IS CONDUCTED INDIVIDUALLY AND THERE IS NO PLAN TO CONDUCT AN INTEGRATED SOVT.

- KSQ-1 Issues:
 - LAN drops were not available on DENVER & BON HOMME RICHARD (BHR ARG) at SOVT. PEARL HARBOR had drop put in at last minute. (These ships are all networked now, but it wasn't done in as expeditious, efficient manner as desirable) LAN drop was not available on TARAHA until after SOVT and BGSIT. A recent GCCS software change caused KSQ-1 to issue class advisory to discontinue use of playback mode except when dockside. The new GCCS s/w caused KSQ playback data to appear on other JOTS terminals, indistinguishable from real-time tracks (raising possibility of confusion/interference with other applications).
 - KSQ-1 is effected by EPLRS/PLRS software changes on PLRS master station (MS) or EPLRS net control station (NCS). example: Crypto issue on BHR ARG. EPLRS uses longer key than PLRS so Over-the-air-rekey (OTAR) doesn't work. SSC working on Over-the-air-transmission capability to send key. This may be an interoperability issue since EPLRS is Army system.

Link
Compatibility



ARG/MEU Interoperability Examples

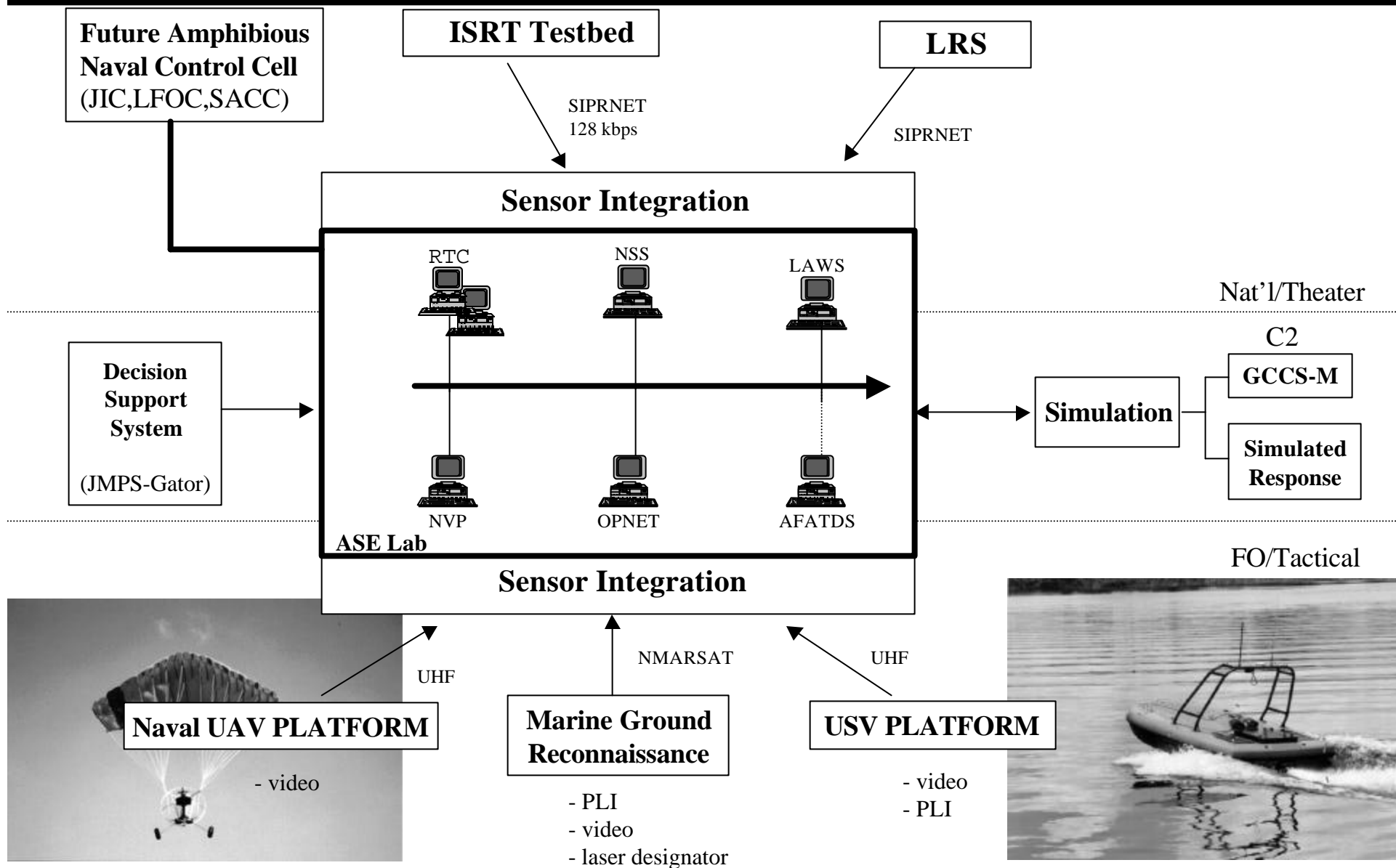
Issues are drawn from exercises, JTFXs, workups & experiments to provide understanding of interoperability issues to be addressed for ARG/MEU

- KSQ-1 Issues:
 - BHR ARG has EPLRS (EPUU radio) on amphib ships and PLRS (BUU radio) on LCAC. TARAWA ARG has PLRS. TARAWA ARG embarked marines will have EPLRS. Requires some not-too-obvious, and unrehearsed, procedures during STOM scenario to ensure BUUs on L-ships are keyed same as Corps Radios going ashore.
- ELB Issues:
 - At the onset of this underway period the PHIBRON had told me that since UHF MDR and the Tactical VTC were finally operative, ELB would be relegated to a “backup” system. By Monday evening UHF MDR and Tactical VTC were not operative and ELB had moved back to the forefront.
 - EMI PROBLEM: OPERATION OF ELB AND MK 23 TARGET ACQUISITION SYSTEM (TAS) RADAR HAS MUTUAL INTERFERENCE. WHEN TAS SHORT RANGE MODE IS SELECTED, ELB CREATES INTERFERENCE WITH TAS’S RADAR RETURN. WHEN TAS IS IN LONG RANGE MODE, TAS DISTORTS ELB’S PICTURE AND AUDIO, MAKING ELB UNUSABLE. REQUEST TAS AND ELB PROJECT OFFICE DESIGN AND INSTALL AN EMI FILTER.

Emerging
Technology



EWC Blitz Demonstration





Success Stories

- Fax Machines
- Operating Systems
- Internet Protocols